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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/541,049	02/13/2006	Nicola Da Dalt	I435.128.101/12928	4105

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EXAMINER	
GANNON, LEVI	
ART UNIT	**PAPER NUMBER**
2817	

MAIL DATE	DELIVERY MODE
06/05/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/541,049	DA DALT, NICOLA	
	Examiner	Art Unit	
	Levi Gannon	2817	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 February 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *17-39* is/are pending in the application.

4a) Of the above claim(s) *1-16* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *17-39* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *2/13/06* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *12/20/05, 8/23/06, 10/27/06*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Drawings

Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the examiner does not accept the changes, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 17-22, 24, 25, and 29-39 are rejected under 35 U.S.C. 102(b) as being anticipated by Duff (GB 2 002 157).

Regarding claims 17 and 37, Duff discloses a device (figure 2) for frequency synthesis comprising: an oscillator (11, 30) driven for generating, at a frequency out of a set of at least two possible output frequencies (frequencies can be: frequency found at

"IN" node, a divided frequency from 11b, or zero), an output signal (OUT); and a control device (20) for driving the oscillator (11, 30), wherein the control device, for the purpose of generating a desired frequency that is not included in the set of possible output frequencies (by providing an average frequency), is configured to drive the oscillator to alternately generate at least two different output frequencies (frequencies can be: frequency found at "IN" node, a divided frequency from 11b, or zero), out of the set of possible output frequencies, such that an average value of the generated output frequencies over a certain time period is substantially the desired frequency (note abstract).

In terms of claim 18, Duff teaches the control device being configured to drive the oscillator with a bit stream generated according to a delta-sigma-principle. The control device operates in an analog to digital conversion principle, which is one form of delta sigma conversion.

As for claims 19, 20, 21, 35, 38, and 39 Duff teaches the control device (20) being configured to drive the oscillator such that the at least two generated output frequencies are alternated at an average frequency that is greater than the reciprocal value of the certain time period, an average frequency that is greater than the at least two possible output frequencies, and at an average frequency that is less than the at least two possible output frequencies. (Switches 35/37, and 36/37 can be switched at any desired speed, specification page 2, lines 104-110.)

In terms of claims 22 and 25, Duff teaches the oscillator comprising a digitally controlled oscillator. Switching device part of oscillator (11, 30) contains digital devices 35-37.

As for claims 24 and 36, Duff teaches a frequency divider (11c, 11k) connected to the output of the oscillator.

Regarding claims 29-33, the methods as recited in the claims are inherently present in the structure as discussed above in claims' 17-21 rejections.

Regarding claim 34, Duff discloses a device (figure 2) for frequency synthesis comprising: a digitally (includes digital devices 35-37) controlled oscillator (11, 30) driven for generating, at a frequency out of a set of at least two possible output frequencies (frequencies can be: frequency found at "IN" node, a divided frequency from 11b, or zero), an output signal (OUT); and a control device (20) for driving the oscillator (11, 30), wherein the control device, for the purpose of generating a desired frequency that is not included in the set of possible output frequencies (by providing an average frequency), is configured to drive the oscillator to alternately generate at least two different output frequencies (frequencies can be: frequency found at "IN" node, a divided frequency from 11b, or zero), out of the set of possible output frequencies, such that an average value of the generated output frequencies over a certain time period is substantially the desired frequency (note abstract).

Claims 17 and 23 are rejected under 35 U.S.C. 102(b) as being anticipated by Hirotomi (European Patent Application 0 430 493).

As for claim 17, Hirotomi discloses a device (figure 7) for frequency synthesis comprising: an oscillator (inside dotted line box) driven for generating, at a frequency out of a set of at least two possible output frequencies (by adjusting current provided to delay stages seen in figure 7), an output signal; and a control device (701/702 and transistor providing current) for driving the oscillator, wherein the control device, for the purpose of generating a desired frequency that is not included in the set of possible output frequencies (note column 1, lines 5-10), is configured to drive the oscillator to alternately generate at least two different output frequencies, out of the set of possible output frequencies, such that an average value of the generated output frequencies over a certain time period is substantially the desired frequency (Adjusting the current fed to the oscillator through the transistor is adjusted by adjusting the variable resistors 701 and 702. The output frequency of the oscillator is then changed by way of a varying control current.).

As for claim 23, Hirotomi teaches the oscillator comprises a ring oscillator (note ring oscillator in figure 7), wherein a current (from transistor shown), out of a set of possible currents (provided by changing values of resistors 701 and 702), can be supplied to the ring oscillator for the purpose of driving the ring oscillator (current inherently is driving the ring oscillator of Hirotomi).

Claims 26-28 are rejected under 35 U.S.C. 102(b) as being anticipated by Mucke et al (hereinafter Mucke) (US Patent 6,211,745).

Regarding claims 26-28, Mucke discloses a device for frequency synthesis (phase locked loop in figure 11) comprising: an oscillator (500, shown in detail in figure 9) driven for generating, at a frequency out of a set of at least two possible output frequencies (output frequency adjusted by adjusting Vtune and switching capacitors C1-C4), an output signal; and a control device (phase locked loop of figure 11) for driving the oscillator, wherein the control device, for the purpose of generating a desired frequency that is not included in the set of possible output frequencies, is configured to drive the oscillator to alternately generate at least two different output frequencies (phase locked loop controls capacitance of oscillator 500), out of the set of possible output frequencies, such that an average value of the generated output frequencies over a certain time period is substantially the desired frequency (varying the output frequency will have an inherent average frequency), wherein the oscillator comprises an LC element including at least one capacitor (C1-C4) that can be switched for the purpose of driving the oscillator and at least one varactor diode (406, 406') that can be driven for the purpose of driving the oscillator.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US Patents 4,555,793 and 4,633,183 teach a desired output oscillator frequency produced by alternating between two frequencies close to the desired output frequency. US Patent 6,734,741 teaches an LC oscillator with a driving control using a delta-sigma principle.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Levi Gannon whose telephone number is (571) 272-7971. The examiner can normally be reached on Monday-Friday 9:30AM-6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Pascal can be reached on (571) 272-1769. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

LG

Robert Pascal
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